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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/601,007	06/20/2003	Satoshi Masaoka	AK-419XX	5771
207 7590 01/14/2008 WEINGARTEN, SCHURGIN, GAGNEBIN & LEOVICI LLP TEN POST OFFICE SQUARE BOSTON, MA 02109			EXAMINER CONLEY, SEAN EVERETT	
			ART UNIT 1797	PAPER NUMBER
			MAIL DATE 01/14/2008	DELIVERY MODE PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/601,007	<b>Applicant(s)</b> MASAOKA ET AL.	
	<b>Examiner</b> Sean E. Conley	<b>Art Unit</b> 1797	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 07 November 2007.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 7-13, 29 and 33 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 7-13, 29 and 33 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on October 15, 2007 has been entered. Claims 7-13, 29 and 33 remain pending.

### ***Claim Rejections - 35 USC § 112***

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claim 11 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Specifically, claim 11 recites the limitation "said unevenness" in line 2. There is insufficient antecedent basis for this limitation in the claim.

***Claim Rejections - 35 USC § 103***

4. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

5. Claims 7-9, 12-13 and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Blidschun et al. (U.S. Patent No. 4,680,163) in view of Tanimura et al. (U.S. Patent No. 6,103,190).

Blidschun et al. disclose a method and apparatus for sterilizing the interior surface of a container (15). The apparatus comprises a high voltage discharge electrode (2a) that is inserted into the container, a ground electrode (13a) located on the outside of the container, a high voltage power source (14), and a source of an aqueous sterilizing agent (distilled water or hydrogen peroxide) which is directed into the interior of the container (see figure 2). The container (15) is sterilized by applying high voltage to the discharge electrode (2a) (which is located opposite from the ground electrode) in a gas atmosphere (an air atmosphere) under normal temperatures and pressures in order to create a corona discharge while at the same time, during the high voltage discharge, an atomized sterilizing agent is introduced to the interior of the container (15). The corona discharge creates an electrostatic field so that the atomized aqueous sterilizing agent is directed to and coated over the interior surface of the container (15), thus clouding the surface of the container (15) with the aqueous sterilant. In addition, the corona discharge creates ozone, which in combination with the aqueous sterilizing agent, enhances the overall sterilization of the interior surfaces of the container (see

figures 1-2; see col. 1, lines 5-19; see col. 2, line 48 to col. 3, line 42; see col. 4, line 43 to col. 5, line 56; see col. 7, lines 4-21).

Blidschun et al. fails to specifically disclose that the high voltage is applied as "pulses" to the discharge electrode in the gas atmosphere.

Tanimura et al. discloses a method and apparatus for sterilizing a gas stream by generating ozone in the gas stream. The ozone is generated by applying high voltage pulses from a high voltage source (21) to a discharge electrode (7) thus creating a corona discharge between the discharge electrode (7) and a ground electrode (8) which forms ozone by ionizing oxygen molecules in the gas (see figure 1; see col. 5, lines 5-61).

Therefore, because both Blidschun et al. and Tanimura et al. disclose methods generating a corona discharge to create ozone, it would have been obvious to one skill in the art to substitute one method for the other to achieve the predictable result of generating ozone from a corona discharge created between a high voltage electrode and a ground electrode.

6. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Blidschun et al. in view of Tanimura et al. as applied to claim 7 above, and further in view of Nam et al. (U.S. Patent Application Publication No. 2002/0063537 A1).

Blidschun et al. fail specifically to teach a discharge side electrode provided with unevenness having continuous projections on the discharge side surface of the electrode.

Nam et al. discloses an apparatus for generating a low temperature plasma at atmospheric pressure that includes a discharge electrode (conductor electrode (5)) provided with unevenness having continuous projections (tips (8, 8', 8'')) along the length of the electrode (5) as shown in figures 3A-3C. These continuous projections facilitate the discharging of the charges which are accumulated in the electrode (see paragraph [0029]).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the invention of Blidschun et al. and include continuous projections on the discharge electrode (18) in order to facilitate and the release of the charges accumulated with the electrode as taught by Nam et al.

7. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Blidschun et al. in view of Tanimura et al. as applied to claim 7 above, and further in view of Dusevoir (U.S. Patent No. 3,819,985).

Blidschun et al. in view of Tanimura et al. disclose the claimed invention except for a discharge electrode with a surface that is helical.

Dusevoir discloses a discharge electrode (34') for generating a corona discharge that includes an outer sheath (48') having integral ribs (54') helically formed. The helical ribs increase the corona discharge of the electrode (34') by increasing the effective area of the ribs (see col. 2, lines 58-66; see figure 4). Furthermore, the use of long thin solid wire electrodes tend to break easily due to concentration of electrical discharge at certain points thereon and due to material fatigue (see col. 1, lines 25-38).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the invention of Blidschun et al. and provide a discharge electrode having helical ribs as taught by Dusevoir in order to increase the corona discharge generated by the electrode and also provide an electrode that will not easily break by using the helical ribs which add strength and evenly distribute the corona discharge throughout the electrode.

8. Claim 33 is rejected under 35 U.S.C. 103(a) as being unpatentable over Blidschun et al. in view of Tanimura et al. as applied to claim 29 above, and further in view of Dusevoir (U.S. Patent No. 3,819,985).

Blidschun et al. in view of Tanimura et al. disclose the claimed invention except for a high voltage discharge electrode provided with unevenness having continuous projections wherein the unevenness is formed into a helical shape.

Dusevoir discloses a discharge electrode (34') for generating a corona discharge that includes an outer sheath (48') having integral ribs (54') helically formed. The helical ribs increase the corona discharge of the electrode (34') by increasing the effective area of the ribs (see col. 2, lines 58-66; see figure 4). Furthermore, the use of long thin solid wire electrodes tend to break easily due to concentration of electrical discharge at certain points thereon and due to material fatigue (see col. 1, lines 25-38).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the invention of Blidschun et al. and provide a discharge electrode having helical ribs as taught by Dusevoir in order to increase the

corona discharge generated by the electrode and also provide an electrode that will not easily break by using the helical ribs which add strength and evenly distribute the corona discharge throughout the electrode.

### ***Response to Arguments***

9. Applicant's arguments with respect to the claims have been considered but are moot in view of the new ground(s) of rejection. Applicant's amendments necessitated the new grounds of rejection. Blidschun et al. in view of Tanimura et al. have been relied upon to meet the limitations of claims 7-9, 12, 13 and 29, while Nam et al. or Dusevoir have been relied upon to teach the same limitations as stated in the final office action for claims 10, 11 and 33.

### ***Conclusion***

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sean E. Conley whose telephone number is 571-272-8414. The examiner can normally be reached on M-F 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gladys Corcoran can be reached on 571-272-1214. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.



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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Sean E. Conley

January 9, 2008